Exhibit 3

Broadband Technology Innovations, LLC (BBTI) is an advanced communications technology company that develops and markets intellectual property. Our extensive patent portfolio broadly defines xDSL systems which, when integrated with the conventional copper network of Local Exchange Carriers (LECs), enable high-speed, interactive multimedia services such as video and data.

Typical licensees of BBTI's technology would include Internet Service Providers (ISPs), LECs (and CLECs), as well as xDSL equipment manufacturers.

BBTI continues to augment its existing portfolio with new intellectual property that will further enhance high-speed broadband applications.

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White Paper

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Broadband Technology Innovations, LLC (BBTI)

White Paper
BBTI's Splitterless DSL Patents

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1. *BROADBAND REPRESENTS A SUBSTANTIAL GROWTH AREA FOR OPERATORS AND VENDORS*

1.1 THE BROADBAND REVOLUTION

The 'World Wide Wait'[1] has been rendered a distant memory for many by the rapid spread of broadband access. The growth of broadband from infancy into adolescence has left behind many earlier debates about whether broadband was economically viable. As email and Web use began taking a foothold in everyday life in the 1990s, the investment case for high-speed access to the home improved. Local Exchange Carrier investments in new network infrastructure have continued to advance, bringing more and more customers dedicated access to broadband services. Core broadband access technologies are now well proven, with millions of customers surfing the Internet at speeds five, ten, or more times faster than with dial-up modems. New applications and devices are emerging, including IPTV (Internet Protocol) and interactive HDTV. And with many traditional products and services seeing slow growth, broadband is now at the top of the strategic agenda for many companies in telecommunications, media and high technology.

Microsoft, for example, is in the course of launching its XBOX 360 next generation games console, which has an integrated Ethernet port to connect to a home broadband gateway. Online gaming services such as Xbox Live, will be a key driver of broadband gateway and DSL service adoption and will provide non-telco businesses, such as Microsoft with a source of new revenues.

DSL can now be seen to have had a significant impact at all levels of the economy:

- It has been of benefit on the demand side, improving consumer welfare through the availability of a wider range of services at lower prices:
  - ***DSL end-users*** now have greater choice and better access to online services. Consumers have a vastly improved online experience, with users now spending more time online than watching TV. Business users have a lower cost alternative to expensive leased line services, and can now provide greater flexibility to their employees through, for example, remote access to the corporate LAN.
  - ***Online services providers*** such as Amazon, EBay and Google have been able to provide more advanced services on the back of a broadband enabled customer base.

[1] http://www.w3.org/Protocols/NL-PerfNote.html

- It has boosted the supply side through improved employment prospects and productivity gains:
  - ***DSL providers*** have been able to tap into a significant revenue source and have been provided with a platform for further new, value-added services and advertising revenues.
  - For ailing ***incumbent operators***, DSL has provided a new lease on life for their copper infrastructure, offset a decline in traditional business revenues and helped defend against loss of market share.
  - ***DSL equipment vendors*** have benefited not only from the substantial direct revenue source of DSL infrastructure, but also from the massive pull-through for other network infrastructure and customer premises equipment (CPE).

1.2 BROADBAND: DRIVING THE GLOBAL ECONOMY

The importance of broadband to future economic development is widely understood and recognised. A 2001 U.S. study estimated the benefit of broadband to the U.S. alone to be upwards of $500bn per year within the next 15-25 years[2]. More recently, in 2005, an attempt was made using actual U.S. economic data to give some empirical support to such claims[3]. The results support the view that broadband access does enhance economic growth and performance, and that the assumed economic impacts of broadband are real and measurable. It was found that between 1998 and 2002, communities in which mass-market broadband became available by December 1999 experienced more rapid growth in employment, the number of businesses overall, and in particular businesses in Information Technology intensive sectors.

In the U.K., it was estimated that a competitive market for broadband would provide a substantial boost to the economy:[4]

- U.K. productivity will rise by 2.5% by 2015. To achieve the same increased output without broadband, everyone in the U.K. would have to work one extra hour each week.
- With faster economic growth, U.K. GDP will be £22bn higher by 2015.
- Government borrowing will be £13bn lower by 2015 through lower spending and extra tax revenues from the faster growing economy.

Such analysis makes a clear and compelling case for the global importance of broadband as an engine for economic growth and welfare gains.

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[2] 'The $500 Billion Opportunity: The Potential Economic Benefit of Widespread Diffusion of Broadband Internet Access', Criterion Economics, 2001

[3] 'Measuring Broadband's Economic Impact', paper presented at 33rd Conference on Communication, Information and Internet Policy', September 2005

[4] 'The Economic Impact of a Competitive Market for Broadband', CEBR, 2003

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1.3 DSL: PUSHING GLOBAL BROADBAND FORWARD

The benefits outlined above have come several steps closer following tremendous growth in broadband adoption from 2000 until 2005. In the U.S., cable modems continue to dominate the market, with an approximate 2:1 lead over DSL. However, outside of North America, cable modem services lag DSL. DSL is therefore the dominant broadband technology installed globally with around 115m subscribers by mid-year 2005[5]. Local loop unbundling and increased market liberalisation, expanded product portfolios and the development and deployment of value-added services and broadband content are expected to continue to drive growth of DSL adoption in the future.

The following summarizes some of the key facts on global broadband deployment as of 30 June 2005[6]:

- The U.S. has the world's largest total broadband population at 38 million, including both Cable Modems and DSL, and the world's second largest DSL base with 15.9m connections.
- China has the world's largest broadband DSL population at 21.2 million.
- The European Union (EU) is the world's largest total broadband region, including Cable Modems and DSL, at 47.5 million.
- The EU is also the world's largest broadband DSL region at 38.5 million, with DSL representing 81% of the region's total broadband.

Rank	Country	DSL Subs Q205
1.	China	21,230,000
2.	USA	15,929,322
3.	Japan	14,168,000
4.	France	7,803,000
5.	Germany	7,800,000
6.	South Korea	6,678,107
7.	UK	5,691,000
8.	Italy	5,135,000
9.	Taiwan	3,360,000
10.	Spain	3,271,771
11.	Canada	2,921,529

Table 1: Top DSL deployments Jun 2005

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[5] 'Global Broadband Subscribers Q205', DSL Forum and Point Topic, 2005

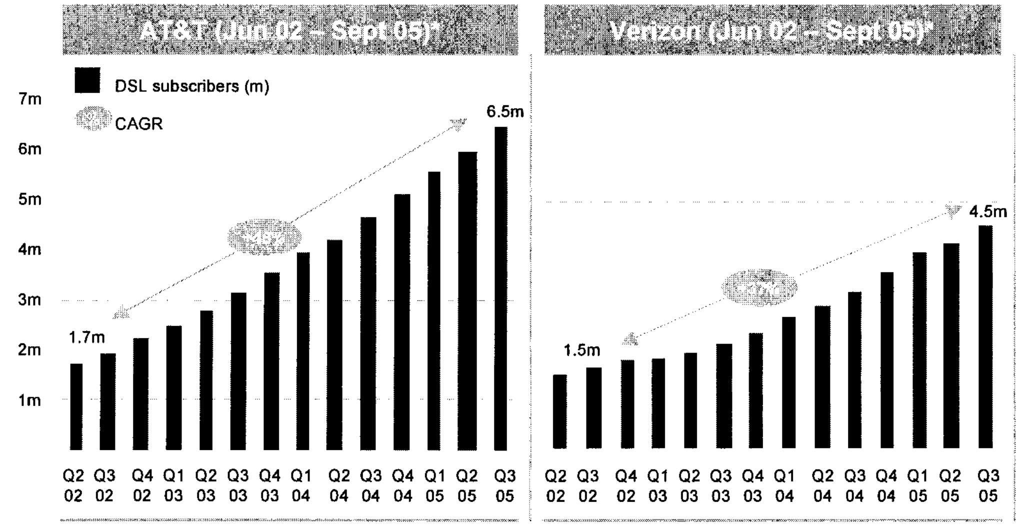
[6] Ibid.

1.4 'SPLITTERLESS' DSL CREATING SIGNIFICANT NEW TELCO REVENUES

DSL forms one of the small bands of 'new wave' services that are acting to offset declines in traditional fixed line revenues and boost the performance of both telecommunications operators and, consequently, equipment vendors.

Figure 1 shows the rapid growth of DSL subscriptions at the top two U.S. providers, incumbents AT&T (formerly SBC) and Verizon. As of September 2005, these two companies taken together had approximately 11m DSL customers. A key enabler in reaching these subscriber numbers was the introduction of so-called 'splitterless' products, using simple in-line filters to enable customers to self-install their new DSL service. While there are no explicit figures available for the proportion of customers using 'splitterless' products, if the simple assumption is made that all customers added from 2000 are using such products, then it could be estimated that AT&T and Verizon have 10.3m 'splitterless' subscribers combined[7]. According to AT&T's financial statements in the 4 quarters leading up to September 2005, AT&T's DSL products alone earned over \$2.6bn[8]. This sum will have been almost wholly generated from a 'splitterless' customer base. However, the full financial impact of the self-install capability across the total DSL operator base only becomes clear when the costs avoided by the removal of expensive truck rolls are included. Given the rate of take-up of DSL this cost avoidance opportunity has been worth millions of dollars to DSL operators.

Figure 1: AT&T and Verizon DSL subscriber uptake[9]


AT&T (Jun 02 – Sept 05)*
Verizon (Jun 02 – Sept 05)*
DSL subscribers (m)
CAGR
7m
6m
5m
4m
3m
2m
1m
1.7m
6.5m
1.5m
4.5m
Q2 02 Q3 02 Q4 02 Q1 03 Q2 03 Q3 03 Q4 03 Q1 04 Q2 04 Q3 04 Q4 04 Q1 05 Q2 05 Q3 05
Q2 02 Q3 02 Q4 02 Q1 03 Q2 03 Q3 03 Q4 03 Q1 04 Q2 04 Q3 04 Q4 04 Q1 05 Q2 05 Q3 05

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[7] Due to the lack of published churn data from DSL providers, the quoted figures make no allowance for any customer churn. Accounting for churned customers would increase these figures.

[8] AT&T Earnings Presentation 3rd Quarter 2005

[9] Quarterly subscriber numbers sourced from AT&T and Verizon investor relations websites, November 2005

1.5 DSL PRESENTS EQUIPMENT VENDORS WITH A SIZEABLE REVENUE OPPORTUNITY

Any impact on the operators will pass through to their technology suppliers. Strong demand for DSL has driven strong sales in the DSL equipment market. Sales of both network infrastructure and CPE have been buoyant. It has been estimated[10] that the global DSL network equipment market generated $3bn in revenue in 2004, with Alcatel maintaining its leadership position with slightly more than 40% of the global market. In the U.S. and Europe, Siemens, Lucent, ECI Telecom, and a handful of smaller vendors all trail behind Alcatel. DSL CPE units shipped were estimated at around $2.7bn in 2004, with Thomson being the leading vendor, trailed by Siemens, Sagem (in Europe) and Westell (in the U.S.).

1.6 NEW SERVICES OVER BROADBAND WILL ENSURE FURTHER GROWTH

Even with such widespread usage, the industry continues to face new waves of users for whom product, promotion, pricing, segmentation, and channel matter more than basic technology. New applications are becoming increasingly critical elements of broadband service. As services such as Skype have shown, current and potential customers need something more than just the World Wide Web. The real long-term impact of broadband for operators will come from new high-margin revenue streams generated from more advanced applications and services, ranging from new entertainment offerings, including IPTV, to enhanced broadband telephony services. Then perhaps we may see the full social and economic impact of broadband.

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[10] 'Worldwide DSL Equipment 2004-2008 Forecast', IDC, December 2004

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2. *BROADBAND TECHNOLOGY INNOVATIONS, LLC (BBTI) HOLDS A SUBSTANTIAL PORTFOLIO OF PATENTS IN "SPLITTERLESS" DSL, A TECHNOLOGY WIDELY DEPLOYED ACROSS THE WORLD*

Basic patents arising from early research into a technology are key to its successful exploitation. BBTI holds a substantial portfolio of patents which are fundamental to splitterless DSL. The patents disclose a system with the following key features present in current splitterless DSL architectures:

- Using existing "twisted pair" telephone wires to a residence for high speed data communications, by transmitting the data at frequencies above voice band;
- Transceivers located at a point in the telephone company's network and at the subscriber's premises (the network-side transceiver is typically described as circuitry that is part of a "signal interface");
- A filter on every phone – the concept that data signals are blocked from entering the domestic telephone;
- Multi-channel, redundant, spaced signalling; and
- Interactive video over voice – video over DSL.

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3. BBTI'S CURRENT SET OF U.S. GRANTED PATENTS US 5,844,596, 6,236,718, 6,243,446 AND 6,542,585 DESCRIBE KEY COMPONENTS OF A SPLITTERLESS DSL SYSTEM AND THE INTERACTIONS BETWEEN THEM

Splitterless DSL has provided a tremendous boost to the fortunes of fixed-line telcos worldwide. By removing the need for professional installation, splitterless DSL is much cheaper and more attractive to subscribers, resulting in the rapid growth described previously.

3.1 THE PATENTS DESCRIBE THE ARCHITECTURE AND FUNCTIONALITY OF A SPLITTERLESS DSL SYSTEM USED FOR VIDEO OR DATA

BBTI's patents describe:

- Two transceivers communicating at frequencies above voice band;
- A communications network with two transceivers interposed;
- Sources of control data and information; and
- Filters interposed to protect the networks and telephone.

The architecture described is diagrammed in Figure 2. Information content from a source, such as the worldwide web, an electronic video library or TV server is received by a transceiver, encoded to a high frequency and passed onto an existing twisted pair public telephone line. At another point, in the local or private telephone network, the information is received by another public transceiver, recovered and passed to a computer or television. Data communication on the telephone line takes place at frequencies above voice band. Filters are interposed to protect telephone equipment and modems from interfering signals.

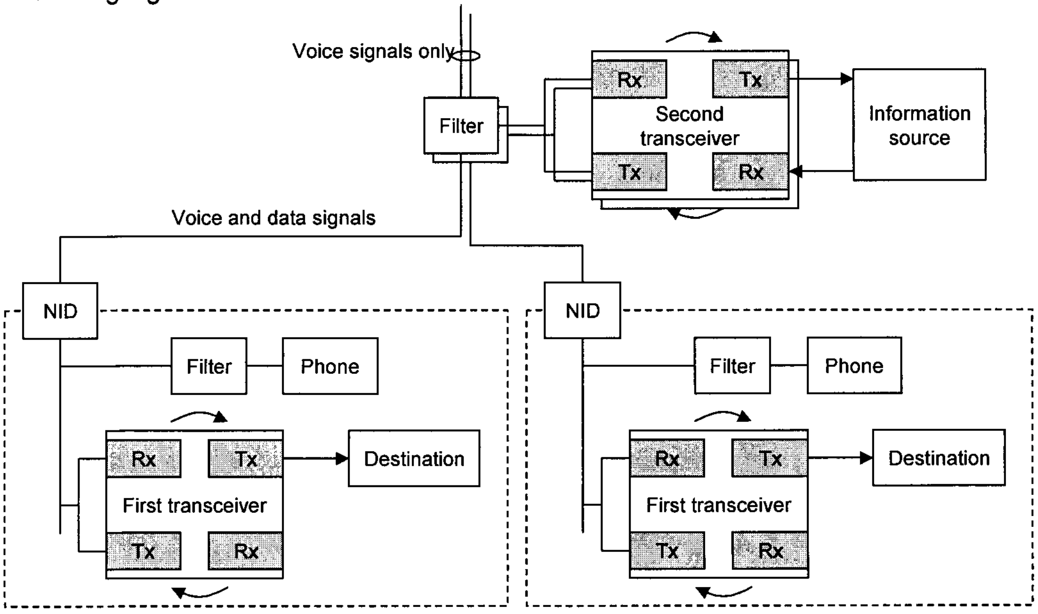
Voice signals only
Filter
Rx
Tx
Second transceiver
Tx
Rx
Information source
Voice and data signals
NID
Filter
Phone
Rx
Tx
Destination
First transceiver
Tx
Rx
NID
Filter
Phone
Rx
Tx
Destination
First transceiver
Tx
Rx

Figure 2: BBTI/Inline's key patent claims

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This architecture describes the splitterless DSL concept, illustrated in Figure 3, used by most ADSL providers. One of the patents' transceivers is the domestic DSL modem; the second transceiver is the DSLAM located within the telephone company's network; and the control data source and destination of information is a terminal such as a TV or PC. Micro-filters (typically supplied in the self-install kit with the DSL modem) are used to protect domestic telephones from the DSL signal.

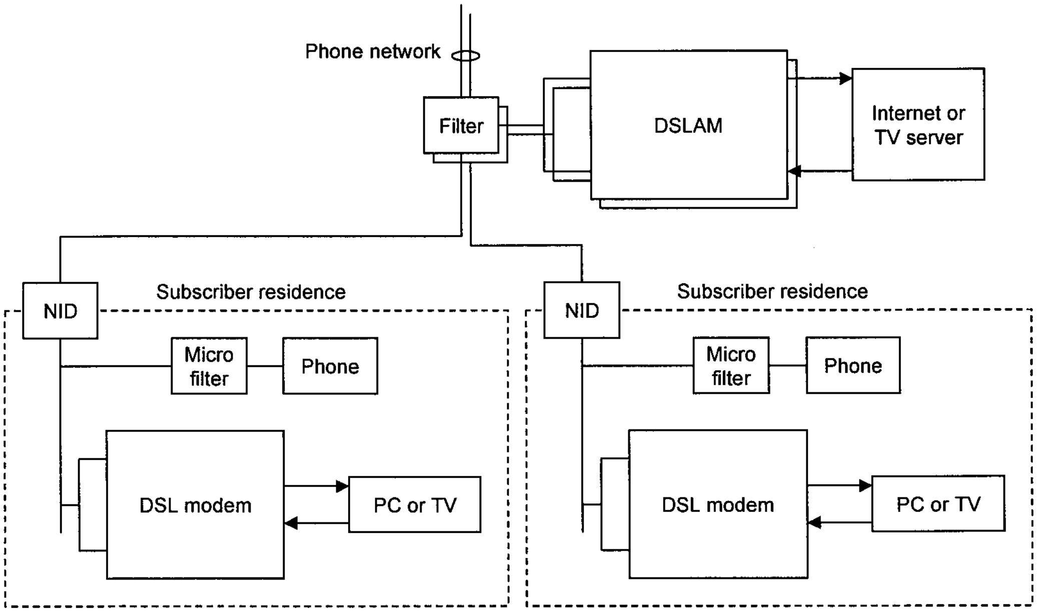
Phone network
Filter
DSLAM
Internet or
TV server
NID
Subscriber residence
Micro
filter
Phone
DSL modem
PC or TV
NID
Subscriber residence
Micro
filter
Phone
DSL modem
PC or TV

Figure 3: Basic splitterless DSL configuration

The patent claims are broad and cover video and data distribution using splitterless ADSL and higher speed ADSL2 and ADSL2+.

3.2 CLAIM ANALYSIS SHOWS INFRINGEMENT IN MORE DETAIL

DSL's infringement can be demonstrated using as an example Claim 1 of the '446 patent.

- A system for communicating information between an external source of information and destinations of information over a telephone wiring network used for passing telephone signals in a telephone voice band between a plurality of telephone devices and a telephone exchange, comprising.....

This describes the basic concept of DSL: "using existing phone lines to communicate information".

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- a transceiver coupled between a conductive path of the telephone wiring network and first destinations of information, including circuitry coupled to said conductive path for accepting signals in a high frequency band of frequencies above the highest frequency of the telephone voice band and rejecting signals in the telephone voice band......

The transceiver is the subscriber's DSL modem (also known as the ATU-R). The DSL modem includes a (filter) circuit to receive signals above the voice band which have been passed onto the telephone line, and to reject voice signals. The signals are destined for a device such as a PC or TV set.

- a plurality of filters, each coupled between said conductive path and a corresponding one of the plurality of telephone devices, for preventing transmission of signals in the high frequency band to the telephone devices; and ......

Each phone in the residence needs a filter placed between it and the phone jack to ensure that DSL signals are blocked from the telephone and interference is prevented.

- a signal interface coupled between the external source of information and said conductive path, including .....
- circuitry for receiving an external signal encoding an information stream from the external source of information....
- circuitry for transmitting over the telephone wiring network to the transceiver an internal signal in the high frequency band encoding the information stream, and .....
- circuitry for limiting transmission of the internal signal in the high frequency band from the telephone wiring network to the telephone exchange and for passing signals in the telephone frequency band between the telephone wiring network and the telephone exchange ....

This describes the DSLAM located at a point within the telephone company's network. The DSLAM circuitry receives and encodes information, and sends the information to a subscriber's DSL modem and filters which ensures that DSL signals do not interfere with the telephone network.

- wherein each of the plurality of filters is coupled to said conductive path at a location separated from the transceiver and from the signal interface....

The filters attached to each telephone are at locations separate from the DSL modem and the DSLAM.

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Claim 61 of the '596 patent reads:

- A system for communicating information between an external source of information and a plurality of destinations of information over a telephone wiring network used for passing telephone signals in a telephone voice band between a plurality of telephone devices and a telephone exchange, comprising .....

This describes the basic concept of DSL: "using existing phone lines to communicate information".

- a plurality of transceivers coupled between the telephone wiring network and corresponding destinations of information, each including .....

DSL modems are located at subscribers' premises between their telephone jacks and their PC or TV.

- circuitry for accepting signals in a high frequency band of frequencies above the highest frequency of the telephone voice band and rejecting signals in the telephone voice band; and ......

Each DSL modem accepts frequencies above voice band and rejects voice band signals.

- a signal interface coupled between the external source of information and the telephone wiring network, including .....
- circuitry for receiving a plurality of external signals encoding a plurality of information streams from the external source of information, and .....
- circuitry for transmitting to selected sets of one or more of the plurality of transceivers a corresponding plurality of internal signals in the high frequency band each encoding one of the plurality of information streams over the telephone wiring network ......

The DSLAM, within the telephone network, is connected to sources of information (for example, a video server or the Internet) and sends information signals to multiple subscribers. The DSLAM encodes the information into the high frequency band and ensures that the correct data is routed to each of the many subscribers the DSLAM serves.

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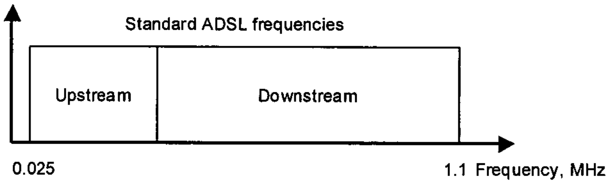
- wherein the telephone wiring network includes a branch network which couples one of the plurality of telephone devices to the telephone exchange, and the branch network includes circuitry for preventing transmission of signals in the high frequency band to the one of the telephone devices on the branch network.........

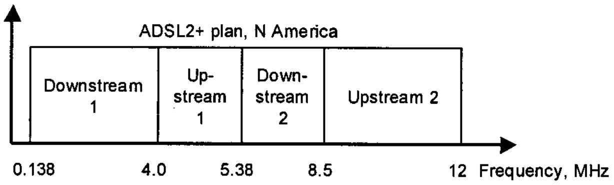
The telephone network has a "tree" structure with connections branching off a trunk and individual subscribers connected to the ends of the "branches".

3.3 THE PATENTS ARE APPLICABLE TO TODAY'S ADSL AND HIGHER SPEED ADSL2 AND ADSL2+

BBTI's claims are broad and describe the operation of the splitterless ADSL systems widely deployed today, as well as the high-speed ADSL2 and ADSL2+. ADSL improvements boost the speeds of DSL links to around 50 Mbps bringing great potential for high-definition (HDTV) video on demand and high quality videoconferencing as well as higher data rates for digital communications.

ADSL, ADSL2 and ADSL2+ are covered under BBTI's four U.S. patents. Both use the same principles described by the patents – data transmission over the voice band signals. The difference is primarily in the detail of the frequency bands they use for the upstream and downstream data. To transmit higher data rates, ADSL2 and ADSL2+ use higher frequencies than ADSL.





3.4 THE PATENTS APPLY TO ALL DSL ARCHITECTURES INCLUDING THE CASE OF REMOTE DSLAMS, WIDELY USED TO REDUCE COST AND IMPROVE SERVICE

DSLAMs can be located at many points within the telephone network between the subscriber premises and the telephone switching equipment inside a Central Office (CO). The location is a trade-off: shorter loops to the subscriber allow higher data rates, but require more DSLAMs than for a CO focused deployment. However, remote DSLAMs are a choice being made by many DSL providers. Not only are higher data rates a competitive advantage, but remote DSLAMs expand the number of potential subscribers, enabling DSL service to those over 18,000 feet from the local telephone company Central Office.

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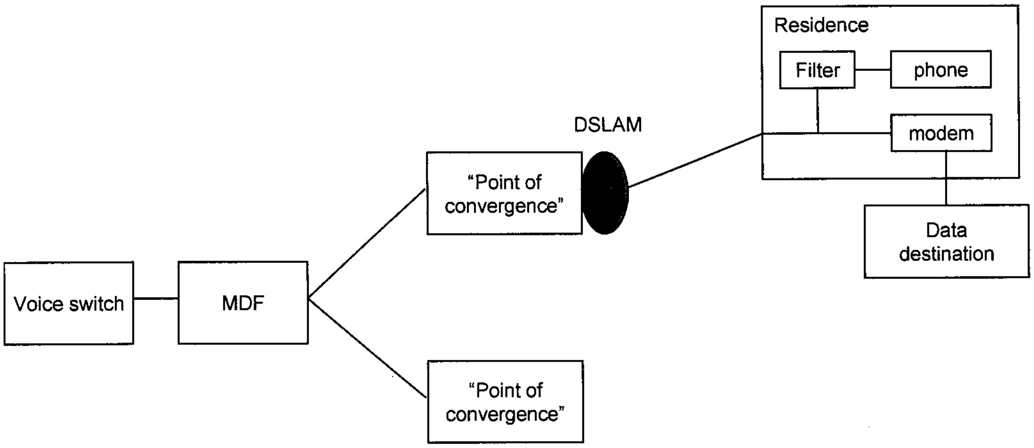
The '596, '448 and '585 patents describe a system where an interface device (DSLAM) that can be located at a "point of convergence" in the phone network where many lines from subscribers – perhaps 100 to 1000 – converge and are bundled together towards the CO voice switch. This describes exactly the idea of a remote DSLAM.


Residence
Filter
phone
modem
DSLAM
"Point of convergence"
Data destination
Voice switch
MDF
"Point of convergence"

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4. CONCLUSION

Splitterless DSL has brought massive benefits to subscribers and a great new business opportunity to telephone companies, including significant new revenues, while utilizing embedded legacy, twisted pair copper infrastructure.

BBTI's patents describe the system level architecture of splitterless ADSL, ADSL2 and ADSL2+.

Service providers and equipment vendors offering Splitterless ADSL services and systems require a license to BBTI's patents.